Claims

1. A plate heat exchanger for indirect heat exchange between at least one heat transfer medium/cooling medium and a plurality fluid flows

a heat exchanger core having a plurality of heat exchange passages for flow of at least one heat transfer medium/cooling medium, flow of a first fluid, and flow of a second fluid,

said heat exchanger core (9) having a first component area and a second component area, said first component area containing heat exchange passages for the first fluid flow (40), a said second component area containing heat exchange passages for the second fluid flow (30),

wherein said first and the second component areas are not in fluid communication, and said first and the second component areas each extend over the height of the heat exchanger core (9), the height of the heat exchanger core (9) being its extension in the direction of the main flow through the heat exchange passages.

2. A plate heat exchanger according to claim 1, wherein the heat exchanger core (9) has a plurality of separating plates arranged parallel to one another, wherein the spaces between adjacent pairs of plates contain said heat exchange passages for the heat transfer medium/cooling medium (10, 20), the first fluid flow (30, 40, 50), and the second fluid flow (30, 40, 50), and wherein said first and the second component areas each extend over the depth of the heat exchanger core (9), the depth of the heat exchanger core (9) being its extension in the direction perpendicular to the plane of said separating plates.

3. A plate heat exchanger according to claim 1, wherein the heat exchanger core has a plurality of separating plates arranged parallel to one another, wherein the spaces between adjacent pairs of plates contain said heat exchange passages for the flow of transfer medium/cooling medium, the first fluid flow, and the second fluid flow, and wherein said heat exchange passages for the flow of heat transfer medium/cooling medium extend over the entire width of the heat exchanger core, the width of the heat exchanger core being its extension in the plane of the separating plates and in the direction perpendicular to the direction of flow through the heat exchange passages.

4. A plate heat exchanger according to claim 2, wherein said heat exchange passages for the flow of heat transfer medium/cooling medium extend over the entire width of the heat exchanger core, the width of the heat exchanger core being its extension in the plane of the separating plates and in the direction perpendicular to the direction of flow through the heat exchange passages.

5. A plate heat exchanger according to one of claims 1 to 4, wherein the heat exchange passages for the heat transfer medium/cooling medium (10, 20) are distributed uniformly over the entire heat exchanger core (9).

6. A plate heat exchanger according to one of claims 1 and 5, wherein said heat exchange core has a third component area which is not in fluid communication with said first and second

component areas and which extends over the entire height of said heat exchanger core, said third component area containing heat exchange passages for flow of a third fluid flow.

7. A plate heat exchanger according to claim 6, wherein the heat exchanger core (9) has a plurality of separating plates arranged parallel to one another, wherein the spaces between adjacent pairs of plates contain said heat exchange passages for the heat transfer medium/cooling medium (10, 20), the first fluid flow (30, 40, 50), and the second fluid flow (30, 40, 50), and wherein said first and the second component areas each extend over the depth of the heat exchanger core (9), the depth of the heat exchanger core (9) being its extension in the direction perpendicular to the plane of said separating plates.

8. A plate heat exchanger according to claim 7, wherein the heat exchanger core has a plurality of separating plates arranged parallel to one another, wherein the spaces between adjacent pairs of plates contain said heat exchange passages for the flow of transfer medium/cooling medium, the first fluid flow, and the second fluid flow, and wherein said heat exchange passages for the flow of heat transfer medium/cooling medium extend over the entire width of the heat exchanger core, the width of the heat exchanger core being its extension in the plane of the separating plates and in the direction perpendicular to the direction of flow through the heat exchange passages.

9. A heat exchanger according to any one of claims 2 to 8, wherein said first component area communicates with a single distributor which traverses the depth of the heat exchanger core and a single collector that traverses the depth of the heat exchanger core.

10. In a process for cryogenic air-separation comprising separating air into an oxygen product stream and a nitrogen product stream in air rectification system having a heat exchanger for cooling feed air, the improvement wherein said heat exchanger is a plate heat exchanger according to one of claims 1 to 9.

11. A process for indirect heat exchange of several fluid flows with a heat transfer medium/cooling medium in a heat exchanger core, comprising:

routing the heat transfer medium/cooling medium, a first fluid flow and a second fluid flow through a plurality of heat exchange passages, wherein the first fluid flow (50) is routed through a first component area of the heat exchanger core (9) and the second fluid flow is routed through a second component area of the heat exchanger core (9), the first and the second component areas are not in fluid communication,and the first and the second component areas each extend over the entire height of the heat exchanger core (9), the height of the heat exchanger core (9) being its extension in the direction of the main flow through the heat exchange passages.

12. A process according to claim 11, wherein the first and the second fluid flow (30, 40, 50) each have a pressure of less than 3.5 bar.

13. A process according to claim 11, wherein the first and the second fluid flow (30, 40, 50) each have a pressure of 1.1-1.8 bar.

14. A process according to one of claims 11 to 13, wherein another fluid flow with a pressure of more than 4 bar is routed through the heat exchanger core.

15. A process according to one of claims 11 to 14, wherein the first and second fluid flows are obtained by cryogenic separation of feed air.

16. A process according to claim 15, wherein the first and second fluid flows are brought into indirect heat exchange with air.